

REMARKS

The present application is directed to modified viral particles. Prior to this Amendment and Response, Claims 1-2, 28-31, and 33-51 were pending. In the present Amendment and Response, applicants amend Claims 44 and 48 and add new Claims 52-54. The amendments do not introduce any new matter. Support for the claim amendments and the new claims is found, for example, in the specification on pages 27 and 62 and in the previously presented Claims 31 and 36. Upon entry of the present amendment, Claims 1-2, 28-31, and 33-54 will be pending.

Claim Rejections under 102(b)

U.S. Patent No. 6,136,321 to Barrett

The Examiner rejects Claims 1, 2, 28-31 and 33-51 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 6,136,321 to Barrett (hereinafter "*Barrett*"). Applicants respectfully traverse. Applicants' claims are directed to modified viral particles comprising at least partially delipidated viral particles. Barrett uses non-ionic surfactants, particularly polysorbate, for inactivating lipid enveloped viruses. Barrett does not disclose partially delipidated viral particles and is silent as to the lipid content in its viral particles. For at least this reason, Barrett does not anticipate Applicants' invention, as claimed. In view of the foregoing, Applicants assert that Barrett fails to anticipate Claims 1, 2, 28-31 and 33-51, and request that the rejection under 35 U.S.C. §102(b) be withdrawn.

The Examiner states that one expects Applicants' partially delipidated viral particles treated with alcohols to be the same as Barrett's viral particle which is treated with a non-ionic detergent. The Examiner asserts on page 5 that Barrett's viral particles have reduced lipid content, however Barrett is silent as to reduced lipid content in its viral particles treated with polysorbate. Since Barrett does not disclose partially delipidated viral particles and does not disclose that the polysorbate treatment has a delipidating effect, Barrett does not anticipate Applicants' invention, as claimed. Applicants do not agree that one of ordinary

skill in the art would expect that viral particles treated with a detergent would be the same as viral particles partially delipidated with an alcohol. No evidence is provided to support this assertion. For at least these reasons, Applicants respectfully assert that *Barrett* does not anticipate Claims 1, 2, 28-31 and 33-51 and request withdrawal of the rejection under 35 U.S.C. §102(b).

U.S. Patent No. 5,419,759 to *Naficy*

The Examiner rejects Claims 1, 29-31 and 33-51 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,419,759 to *Naficy* (hereinafter "*Naficy*"). Claims 2 and 28 were not rejected. On page 5, Claim 48 was written in by hand with the Examiner's initials as being included in this rejection. On page 7 states that Claim 48 is not rejected. Applicants request clarification of the status of Claim 48.

Applicants' claims are directed to a modified and partially delipidated viral particle that incites a positive immune response and comprises at least one exposed epitope. *Naficy* does not anticipate Applicants' claims as *Naficy* does not disclose a modified and partially delipidated viral particle that incites a positive immune response and comprises at least one exposed epitope.

Naficy's method is different from Applicants' method used to make the claimed partially delipidated viral particles. In Applicants' method, extracted lipids remain in the organic solvent. In contrast, *Naficy* retains the extracted lipids, as well as the delipidated lymphocytes, in the plasma to be returned to the patient. (See *Naficy*, col. 10, lines 20-28 and col. 13, lines 4-22). Therefore, since *Naficy's* product is different from Applicants' claimed compositions which do not contain the lipid extracted from the viral particles, *Naficy* does not anticipate Applicants' claimed compositions. Also, since *Naficy's* method is different from Applicants' method used to make viral particles, Applicants respectfully assert that *Naficy* does not anticipate Applicants' method used to make viral particles that incite a positive immune response and contain at least one exposed epitope not usually presented to the immune system.

Naficy describes a method and device for treatment of HIV infection by removing blood from a patient and treating blood with organic solvents in a device for the purpose of killing the virus and the infected cells. Applicants assert that *Naficy* fails to teach the partially delipidated particles recited in Claim 1 and fails to inherently anticipate applicants' claimed invention. Claim 1 recites a partially delipidated viral particle that initiates a positive immune response in an animal or a human and comprises at least one exposed epitope not usually presented to the immune system of the animal or the human by a non-delipidated viral particle. *Naficy* fails to teach immunogenic viral particles that comprise exposed epitopes not usually presented to the immune system by a non-delipidated viral particle. *Naficy* discloses chemically killing the virus in order to inactivate it and destroying the glycoprotein spikes. *Naficy* is silent as to partially delipidated viral particles that initiate a positive immune response and comprise at least one exposed epitope not usually presented to the immune system of the animal or the human by a non-delipidated viral particle. *Naficy* fails to disclose potential immunogenicity of its delipidated plasma. Accordingly, *Naficy* does not anticipate Applicants' invention, as claimed.

As asserted in the previous response, the partial delipidation method used by Applicants resulted in partially delipidated particles comprising viral envelopes, including envelope proteins. In contrast, 5% solvent destroys viral envelopes and obliterates envelope protein epitopes from viral particles. *Naficy* teaches use of 5% or greater solvent concentration. Applicants present amended Claim 48 and new Claim 52 reciting delipidation with 0.3% to 2.5% solvent. *Naficy* fails to anticipate these claims at least because it fails to teach the use of less than 5% solvent for viral delipidation.

As asserted in the previous response and in view of the foregoing and based on the current case law, *Naficy* fails to inherently anticipate Applicants' claimed compositions. *See In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (in order for a reference to anticipate inherently, extrinsic evidence must clearly show necessary presence of missing descriptive matter). *Naficy* fails to teach the conditions necessary to generate immunogenic viral particles retaining at least one epitope upon delipidation with 5% solvent, such as mixing

conditions, and therefore fails to anticipate the claims inherently. *See also In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (inherency not inevitable, but rather result of optimized conditions). In *Rijckaert*, it was held that assuming the variables giving rise to the claimed result was not sufficient to make the claimed invention inherently anticipated. *Id.* at 1533-34. Since one of ordinary skill in the art would have to optimize the conditions that *Naficy* fails to teach, such as mixing conditions, in order to avoid destruction of viral particles upon delipidation with 5% solvent, the teaching of *Naficy* is not sufficient to inherently anticipate the claimed composition. Both *Robertson* and *Rijckaert* are cited in MPEP 2112. Thus, under *Robertson*, *Rijckaert* and MPEP 2112, *Naficy* fails to inherently anticipate Claims 1, 2, 28-31 and 33-47.

Moreover, *Naficy* teaches the disappearance or elimination of viral infectivity upon delipidation, which shows that the delipidation conditions used in *Naficy* destroyed viral particles. *Naficy* teaches **no recovery of infectivity of “up to 7 logs of virus”** after incubation with 5% diethyl ether at room temperature for 5 minutes. *See Naficy*, Column 9, lines 10-11, 15-17, and 33-35. In contrast, Applicants’ method results in a **2.5 log reduction in infectivity of immunodeficiency virus upon delipidation, with the remaining virus titer of $10^{4.5}$** . *See* specification, p. 53, lines 16-17. The delipidation of immunodeficiency virus by Applicants’ method results in a reduction of infectivity as opposed to a complete elimination of infectivity. *Naficy* teaches disappearance of viral infectivity, indicating destruction of integrity of viral particles.

In view of the foregoing, applicants assert that *Naficy* fails to anticipate Applicants’ claims. Applicants request that the rejection of claims under 35 U.S.C. §102(b) be withdrawn.

CONCLUSION

The foregoing is submitted as a full and complete response to the Non-Final Office Action mailed April 17, 2006. No additional fees are believed due, however, the Commissioner is hereby authorized to charge any deficiencies which may be required or credit any overpayment to Deposit Account Number 11-0855.

Applicants assert that the claims are in condition for allowance and respectfully request that the application be passed to issuance. If the Examiner believes that any informalities remain in the case that may be corrected by Examiner's amendment, or that there are any other issues which can be resolved by a telephone interview, a telephone call to undersigned agent at (404) 815-3102 or to John K. McDonald at (404) 745-2470 is respectfully solicited.

Respectfully submitted,



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